

Work Order ID 62746

Thursday, October 07 2010 1:28:10 PM



Page 1

Item ID: D206-667-203

Accept



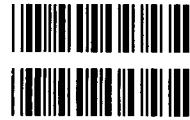
Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 10/7/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/27/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:



Date: 10/10/07

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr	Revision Nbr
D206-667-243	Rev C

100



DOCUMENT CONTROL

DC

Document Control

Memo

0.00

Photocopy bluefile and create labels as per PPP D206-667-203 CHG003

J 10/11/24

J for BG 10-11-23

110



BENDING MACHINE - CROSSTUBES

CNC Bend 2

CNC Alpha 160 Bender

Memo

0.00

Bend tube as per Dwg D206-667-243 using CNC bender program 206L-AF

BL 10-11-28

120



QC15- Crosstube Dimensional Check

QC

Quality Control

Memo

0.00

S. dulles

0.00

(X)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 62746

Page 2

Thursday, October 07, 2010 1:28:10 PM

Item ID: D206-667-203

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 10/7/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/27/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

130



Crosstubes

Crosstubes

Crosstubes

Memo

0.00

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D206-667-243 and drill table DT8577. Locate hole #6 for towers as per QSI 10. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243 Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D206-667-243. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D206-667-243

6-Drill Fwd rivet holes using drill Jig DT8789FWD as per Dwg D206-667-143. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D206-667-243.

8-C'sink holes as per Dwg D206-667-243.

9 -Scribe part # and batch # using vibrating stylus as per Dwg D206-667-243
Inside of Cuff(Donot engrave on outside of tube)

10 -Deburr & Inspect for surface damage. Repair damage within limits as per

EL 10-11-9.

SAD 10-11-10

①

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 62746

Thursday, October 07, 2010 1:28:10 PM

Page 3

Item ID: D206-667-203

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 10/7/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/27/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start



QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
StampDwg
D206-667-243

140



HandFXtube

Crosstubes Chemical Conversion

0.00

SAD

10-11-10



Hand Finishing Crosstubes

150



QC

QC3- Inspect Part Finish

0.00

Siolulu



Quality Control

160



QC

QC5- Inspect part completeness to step on W/O

0.00

Siolulu



Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 62746

Thursday, October 07, 2010 1:28:10 PM



Page 4

Item ID: D206-667-203

Accept



Setup

Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 10/7/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/27/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

170



Outsource process - NDT per QSI038 4.1

0.00

CZ 10/11/12 ①

Outsource2

Memo

0.00

Outsource process - NDT

Liquid Penetrant Inspection as per QSI 038Or
Issue P/O: 12912
LPI as per ASTM 1417
Level 2 Attach copy of NDT results to work order

180



Packaging

0.00

Rajesh ①

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

190



QC5- Inspect part completeness to step on W/O

0.00

ML 10 11 15 ①

QC

Quality Control

Memo

0.00

Ensure results are as per Dwg D206-667-243

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 62746

Thursday, October 07, 2010 1:28:10 PM



Page 5

Item ID: D206-667-203

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 10/7/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/27/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

200

Operation
Description

SprayPaint

Set Up/
Run Hours

0.00

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

SprayPaint

Memo

0.00

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 8:00Finish Time: 9:00

PAINT:

Start Time: 1:30Finish Time: 2:30

210



QC

QC14- Inspect Spray Paint

0.00

Quality Control

Memo

0.00

Wrap in plastic bag to protect from scratches

W 10 11 16 (1)

BT 10 -11-17

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 62746

Thursday, October 07, 2010 1:28:10 PM



Page 6

Item ID: D206-667-203

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 10/7/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/27/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

220

Operation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

0.00

Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Install nut plates as per Dwg D206-667-243.

 10 11 22(1)

230



Skidtubes

0.00

Crosstubes

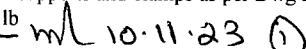
Memo

0.00

Crosstubes

1-Install support using 0.03" to 0.06" thick layer of magnobond 6398 per QSI
015. Let cure for 12h after installation and prior to packaging. Note: (3) top
holes should be facing up.

A/R Magnobond 6398: 115580 exp. 01/2011

2-Install supports and clamps as per Dwg D206-667-243. Torque clamps to 80-
100 in lb
 10.11.23 (1)

 10 11 22(1)

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 62746

Thursday, October 07, 2010 1:28:10 PM



Page 7

Item ID: D206-667-203

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 10/7/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/27/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

240



QC

Quality Control

Operation
Description

QC5- Inspect part completeness to step on W/O

Set Up/
Run Hours

0.00

S 10/11/23

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

250



Packaging

Packaging

Pick Kit

0.00

10/11/23

260



Quality Control

QC4- 100% Inspect kits for completeness

0.00

S 10/11/24

10/11/24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 62746

Thursday, October 07, 2010 1:28:10 PM



Page 8

Item ID: D206-667-203

Accept



Setup

Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 10/7/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/27/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run

Start



QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

Sequence ID/
Work Center ID

270



Packaging

Operation
Description

Packaging

Set Up/
Run Hours

0.00

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInspec.
Stamp

Packaging

Packaging

Memo

0.00

Identify and pack for shipping as per PPP D206-667-203

Location: 63PPP Rev: 0*10/14/240*

280



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

*10/11/240**MF
10-11-24*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Thursday, October 07, 2010 1:28:15 PM

Page 1

Work Order ID: 62746



Parent Item: D206-667-203



Parent Item Name: Crosstube Aft

Start Date: 10/7/2010

Required Date: 10/27/2010

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:F 05.09.01 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev:G 08-06-03 update as per DSI9415 (ECN1198) DD verified by:ec
IPP Rev:H 08-07-18 remove thread masking in step 12 DD verified by:EC
IPP Rev:I 08-12-15 add magnobond DD verified by:EC
IPP Rev J 09.01.06 ECN 08-562 EC verified by:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D206-667-203TRN		Manufactured	No			220	Each	2.0000	1	1			

Crosstube Turning Detail

D2873-043	Manufactured	No	<u>Location</u>		220	Each	16.0000	2	2		<u>Loc Qty</u>		<u>Loc Code</u>		
			LG				2								
			61983				1								
			62029				1								

D2873-043	Manufactured	No	<u>Location</u>		220	Each	16.0000	2	2		<u>Loc Qty</u>		<u>Loc Code</u>		
			LG				2								
			61983				1								

D2873-045	Manufactured	No	<u>Location</u>		220	Each	14.0000	2	2		<u>Loc Qty</u>		<u>Loc Code</u>		
			ST				16								
			60981				16								

D2873-045	Manufactured	No	<u>Location</u>		220	Each	14.0000	2	2		<u>Loc Qty</u>		<u>Loc Code</u>		
			LG				14								
			60982				14								

<u>Location</u>		<u>Loc Qty</u>	<u>Loc Code</u>
LG		14	
60982		14	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Thursday, October 07, 2010 1:28:15 PM

Page 2

Work Order ID: 62746



Parent Item: D206-667-203



Parent Item Name: Crosstube Aft

Start Date: 10/7/2010

Required Date: 10/27/2010

Start Qty: 1.00

Required Qty: 1.00

D2892-1



Manufactured

No

230

Each

32.0000



2

2

W 10 11 22

Support

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG	32	
41986	12	
42785	20	

D3595-063-450



Manufactured

No

230

Each

121.6590



4

4

W 10 ~ 11 ~ 22

RUBBER CUSHION

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG	121.659737	
53775	5.97897368	
58161	3.56	
59580	10.12	
61465	72	
62535	30	

MS20601-AD4W10



Purchased

No

230

Each

32.0000



14

W 10 ~ 11 ~ 22

RIVET

B# 115881

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG051	18	
114245	2	
115405	16	
ST322	14	
113220	14	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Thursday, October 07, 2010 1:28:15 PM

Page 3

Work Order ID: 62746



Parent Item: D206-667-203



Parent Item Name: Crosstube Aft

Start Date: 10/7/2010

Required Date: 10/27/2010

Start Qty: 1.00

Required Qty: 1.00

MS21920-22



Clamp(per MIL-DTL-8783C)

Purchased

No

230

Each

62.0000

4

4



W 10.11.22

AN5-10A



Bolt

Purchased

No

114077

250

Each

305.0000

10

10



10.11.23.5

AN5-32A



Bolt

Purchased

No

250

Each

300.0000

4

4



10.11.23.5

Location

Loc Qty

Loc Code

ST337

305

115108
115429
115589
115700

18
50
100
137

ST340
114056
114405
115016
115108
115589
115698

300
40
50
50
60
50

5

5

4

4

4

4

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)							
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector	
			Initial Chief Eng	Action Description Chief Eng	Sign & Date				

NOTE: Date & initial all entries

Picklist Print

Thursday, October 07, 2010 1:28:15 PM

Page 4

Work Order ID: 62746



Parent Item: D206-667-203



Parent Item Name: Crosstube Aft

Start Date: 10/7/2010

Required Date: 10/27/2010

Start Qty: 1.00

Required Qty: 1.00

AN5-34A



Bolt

Purchased

No

250

Each

68.0000

4

4

10/11/23SF

Location	Loc Qty	Loc Code
ST340	68	
113149	2	
113226	46	
115835	20	

AN960JD516

NAS1149D0563J

Purchased

No

250

Each

34.0000

18

18

M114742 10/11/23SF

Location	Loc Qty	Loc Code
ST	34	
103694	18	
107534	12	
109287	4	

MS21042L5



Nut

Purchased

No

250

Each

895.0000

4

4

10/11/23SF

Location	Loc Qty	Loc Code
ST139	26	
114813	26	
ST300	869	
115156	369	
115594	500	

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

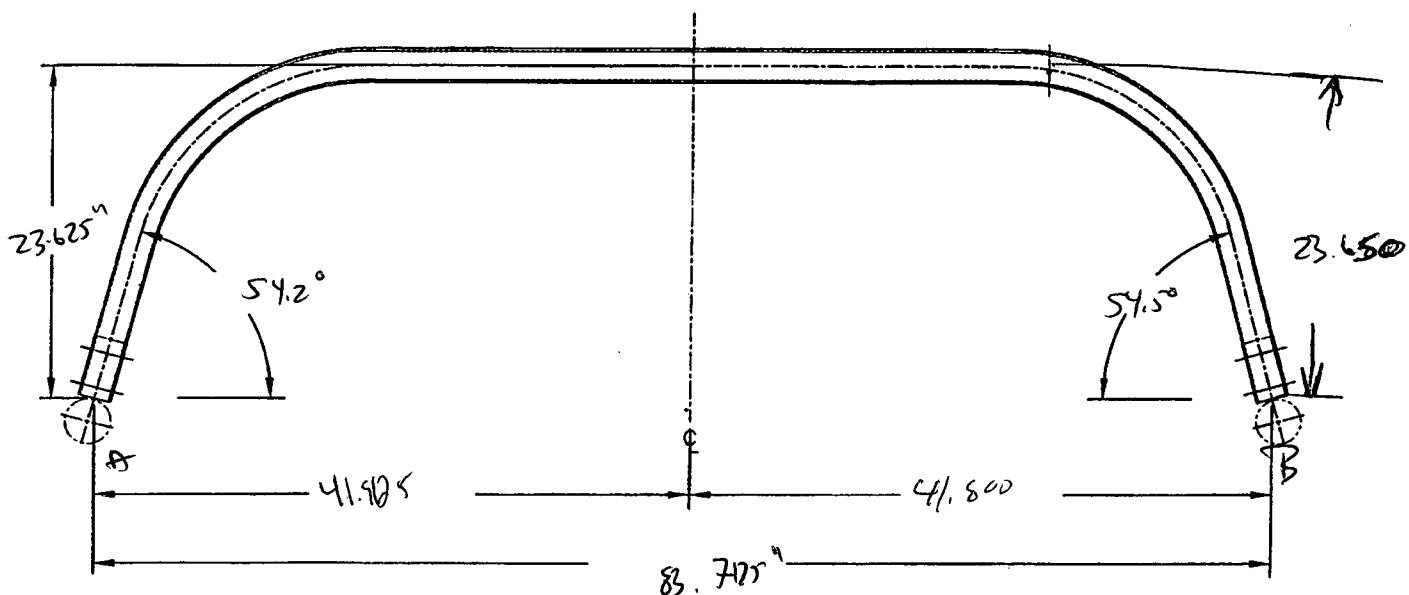
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	127476
Description: Crosstube High Aft (206L)	Part Number:	D206-667-203
Inspection Dwg: D206-667-243 Rev: C		Page 1 of 1

Required Dimension	Min	Max
Height	23.39	23.65
1/2 Span	41.79	42.05
Angle	54	56
Total Span	83.58	84.1



Comments	

QC15 Inspection	8
Date	10/10/08

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.11.17	Dwg Rev updated	KJ	
C	09.12.14	Dimensions update per Dwg Rev C	KJ	

41.9125
41.8006
83.7125

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Item	Qty	Part Number	Description
1	X	D206-667-243	CROSSTUBE ASSEMBLY (206L HIGH AFT)
2	1	D6004-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2892-1	SUPPORT
6	4	D3595-063-450	RUBBER CUSHION
7	4	MS21920-22	CLAMP
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBC-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6004-115
FINISHED LENGTH = 104.91 ± 0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 21.9 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2892-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-22 CLAMPS WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2892-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY /
SUBJECT TO AMENDMENT
WITHDRAWN
WORK ORDER
NO. *62744*
B70-10-07

RELEASED
62744

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-450 WAS D2856-400-773 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN A-3, C5-3, D3-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUTUBES	PH	05.07.26
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION		BY DATE
DESIGN	9	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	<i>11</i>	DRAWING NO.	REV. C
MFG. APPR.	<i>EP</i>	D206-667-243	SHEET 1 OF 4
APPROVED	<i>EP</i>	TITLE	SCALE
DE APPR.	<i>EP</i>	CROSSTUBE ASS'Y (206L HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

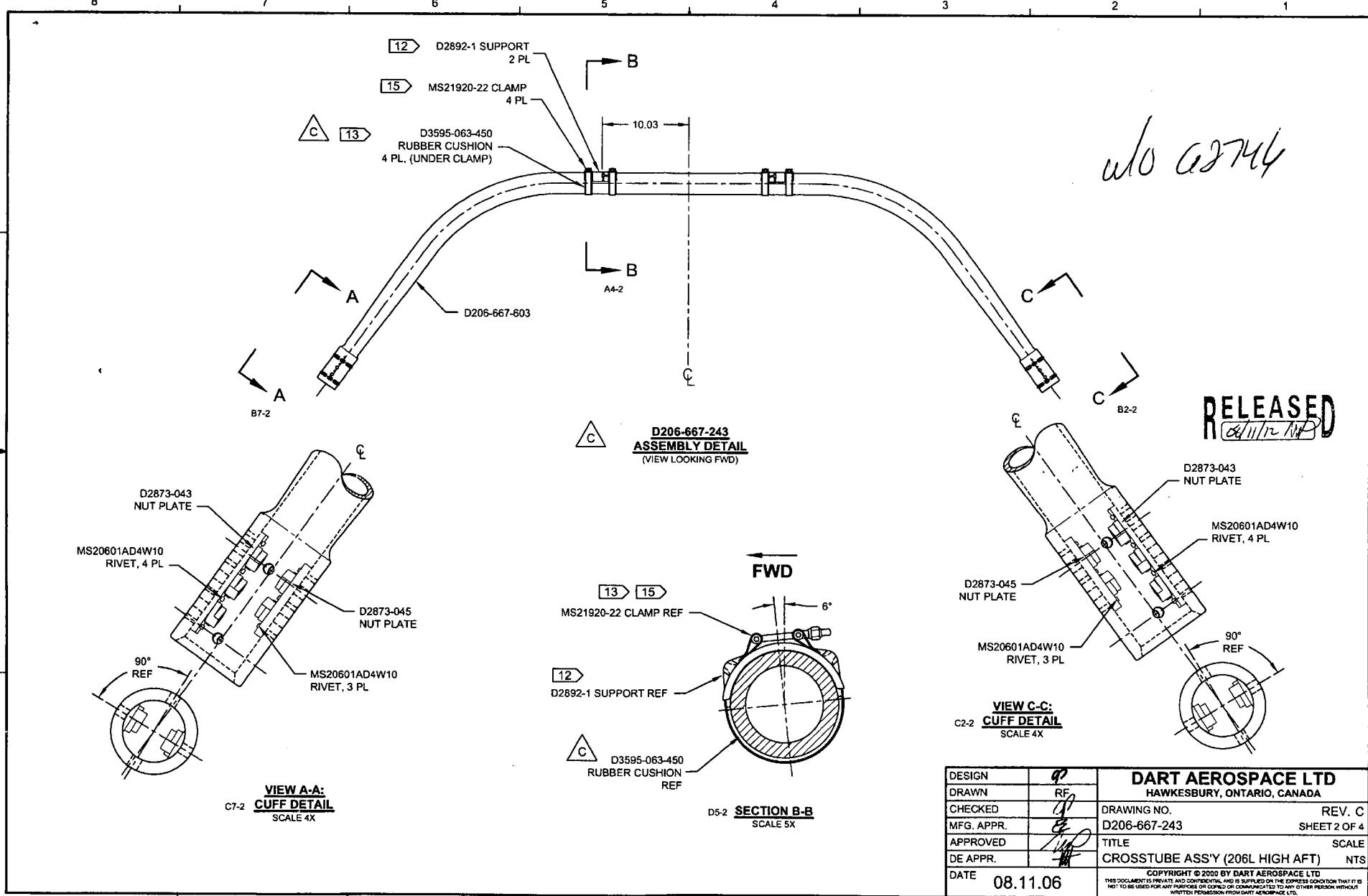
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

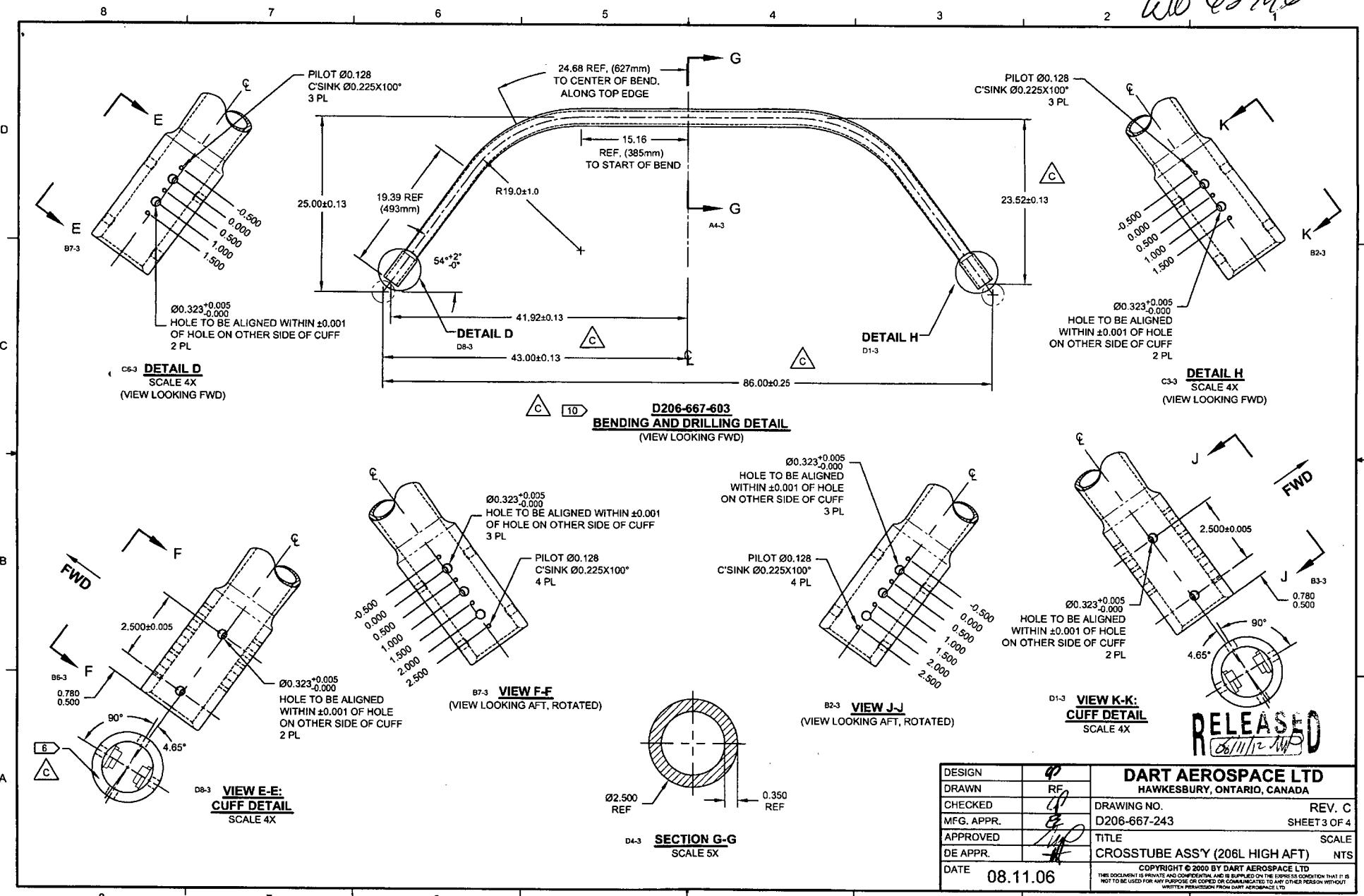
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

16 02746



DESIGN	90	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	CP	DRAWING NO.	REV. C
MFG. APPR.	CP	D206-667-243	SHEET 3 OF 4
APPROVED	JP	TITLE	SCALE
DE APPR.	JP	CROSSTUBE ASSY (206L HIGH AFT) NTS	
DATE	08.11.06	COPYRIGHT © 2000 DART AEROSPACE LTD THIS DOCUMENT IS THE PROPERTY OF DART AEROSPACE LTD. IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT	

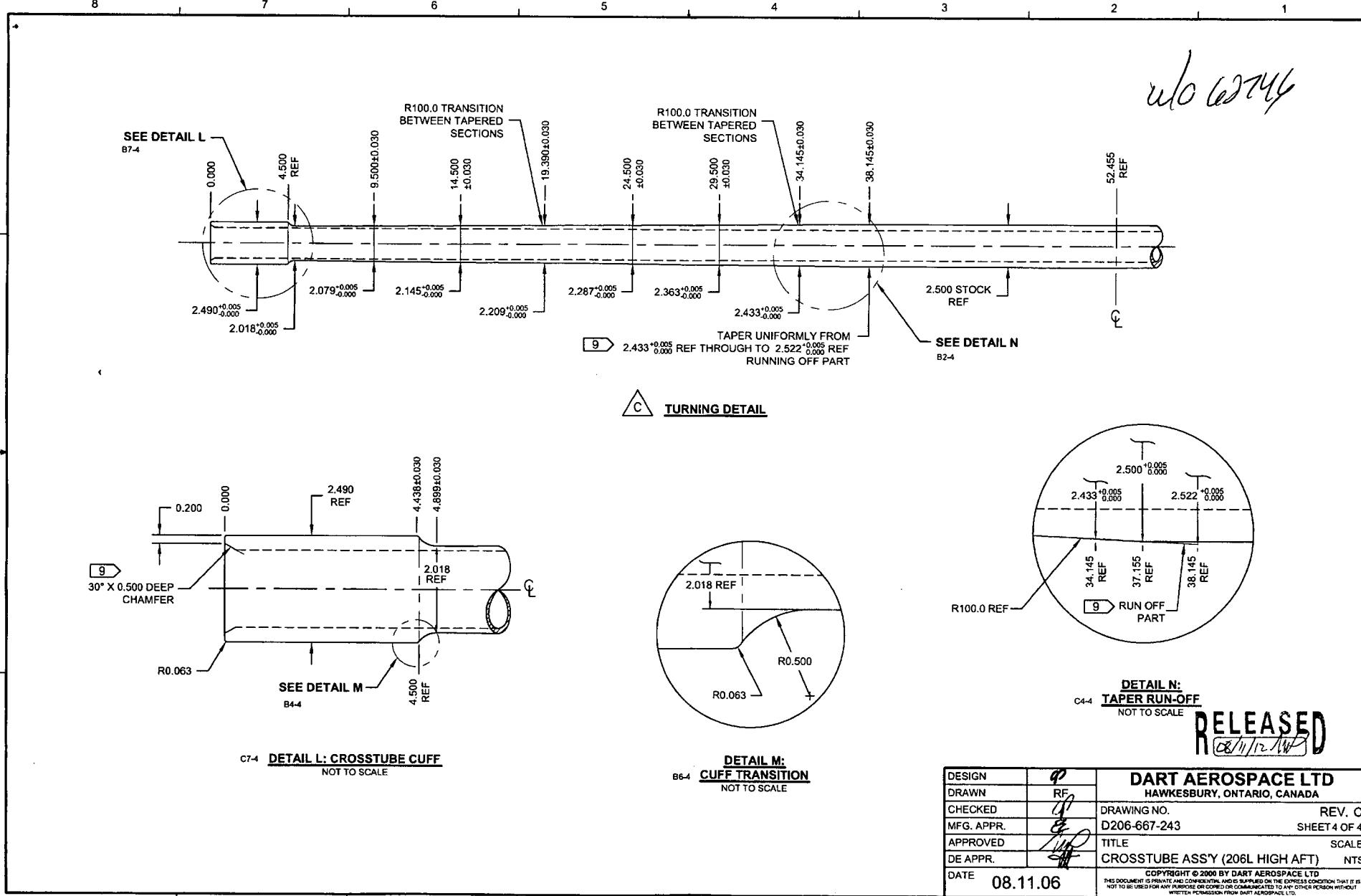
W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



WORK ORDER CHANGES

W/O:		PROCEDURE CHANGE					By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
DATE	STEP										

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 15198

CLIENT	DART AEROSPACE			DATE	Nov. 12. 2010	TIME	AM <input checked="" type="checkbox"/> PM <input type="checkbox"/>
ATTENTION	LINDA LACELLE			ACUREN JOB NO.	188-10-0937		
ADDRESS	1270 ABERDEEN ST. HAWKES BAY, ON.			PO/WO NO.	12912 -		
PROJECT	F.P.I. ON CROSS TUBES.			WORK LOCATION	HAWKES BAY PLANT.		
ITEM(S) EXAMINED	8 UNITS.			ACCEPTANCE STD.	ASTM 1417/ REV./DATE 2007		

JOB DESCRIPTION	PROCEDURE NO. LT-002	REV./DATE 2008	TECHNIQUE NO. LT-TECH2	REV./DATE 2008
PART NO.	CROSS TUBES - SEE RESULTS MATERIAL ALUMINUM THICKNESS			
SCOPE	WET FLUORESCENT LIQUID PENETRANT INSPECTION CARRIED OUT ON 100% EXTERNAL SURFACE.			

METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED	
FAMILY BRAND	MAGNA FLUX		BLACK LIGHT S/N 16459 OUTPUT > 1000 μ W/CM ² AMBIENT < 2 fc			
PENETRANT	ZL607	MINIMUM DWELL TIME	10 MIN.	LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE		
PENETRANT REMOVER	H2O	MINIMUM DRY TIME	>10 MIN.	OTHER		
DEVELOPER	SKO 32	MINIMUM DWELL TIME	10 MIN.	LIGHT METER S/N	1078866	CAL DUE DATE
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY	OCT-19-2011		

TEST SURFACE					
SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input checked="" type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED	<input checked="" type="checkbox"/> CLEAN BARE METAL
SURFACE TEMPERATURE	< - 4°C/ 20°F		< - 4°C/ 20°F TO 10°C/50°F		<input type="checkbox"/> 10°C/50°F TO 52°C/125°F <input type="checkbox"/> > 52°C/125°F

RESULTS- <input type="checkbox"/> METRIC <input checked="" type="checkbox"/> IMPERIAL					
---	--	--	--	--	--

1 CLOSTUBE W.O. 62923 ✓

1 CLOSTUBE W.O. 62924 ✓

1 CLOSTUBE W.O. 62746 ✓

1 CLOSTUBE W.O. 62745 ✓

1 CLOSTUBE W.O. 63019 ✓

1 CLOSTUBE W.O. 63018 ✓

1 CLOSTUBE W.O. 62190 ✓

1 CLOSTUBE W.O. 62189 ✓

ml 10-11-15

Scope of Services
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care.
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE	MAUREEN MURDOCH	PRINT:	SIGNATURE:	DTR# E03234
TECHNICIAN (SIGNATURE):				REPORT REVIEWED BY:
NAME (PRINT):	Mike Ellsworth	1 ST TECHNICIAN	2 ND TECHNICIAN	NAME <input type="text"/> INITIALS <input type="text"/>
CGSB LEVEL	2	SNT LEVEL	CGSB LEVEL	SNT LEVEL
CGSB REG. NO.	6606	CGSB REG. NO.	CGSB REG. NO.	

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY

REFERENCE ONLY

5.0 PARTS LIST

Item	Qty -011	Qty -013	Qty -015	Qty -101	Qty -201	Qty -103	Qty -203	Qty -105	Qty -205	Part Number	Description	
	X									D206-667-011	SPACER BLOCK KIT	
	X									D206-667-013	NUT PLATE KIT (-101/-103/-105/-203/-205)	
		X								D206-667-015	NUT PLATE KIT (-201)	
			X							D206-667-101	CROSSTUBE INSTALLATION, 206A/B HIGH FWD	
				X						D206-667-201	CROSSTUBE INSTALLATION, 206A/B HIGH AFT	
					X					D206-667-103	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH FWD	
						X				D206-667-203	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH AFT	
							X			D407-667-105	CROSSTUBE INSTALLATION, 407 HIGH FWD	
								X		D407-667-205	CROSSTUBE INSTALLATION, 407 HIGH AFT	
1			1							D206-667-141	CROSSTUBE ASSEMBLY, 206A/B HIGH FWD	
2				1						D206-667-241	CROSSTUBE ASSEMBLY, 206A/B HIGH AFT	
3					1					D206-667-143	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH FWD	
4						1				D206-667-243	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH AFT	
5							1			D407-667-145	CROSSTUBE ASSEMBLY, 407 HIGH FWD	
6								1		D407-667-245	CROSSTUBE ASSEMBLY, 407 HIGH AFT	
10		*2	*2	*2			*2			D2891-1	SUPPORT	
11						*2				D2892-1	SUPPORT	
12								*1		D2894-1	SUPPORT	
13		*2	*2	*2			*2			D2856-400-694	ABRASION STRIP	
14							*2			D2856-400-773	ABRASION STRIP	
15								*1		D2856-600-851	ABRASION STRIP	
16		*4	*4	*4			*4			MS21920-20	CLAMP	
17							*4			MS21920-22	CLAMP	
18								*2		MS21920-24	CLAMP	
19			4	4	4			4		AN5-32A	BOLT	
20						4			4	AN5-34A	BOLT	
21			4	4	4	4		4	4	MS21042L5	NUT (OR MS21042-5)	
22			8	8	8	8		8	8	AN960JD516	WASHER	
23										*2	D3190-1	CHAFING SHIELD
30		8									AN4-6A	BOLT
31		8									AN4-7A	BOLT
32		16									AN960JD416	WASHER
33		2									D3193-041	SPACER BLOCK ASSEMBLY
40		2		*2			*2	*2	*2	D2873-043	NUT PLATE	
41		2		*2			*2	*2	*2	D2873-045	NUT PLATE	
42			2		2					D2872-043	NUT PLATE	
43			2		2					D2872-045	NUT PLATE	
44		10		10		10				AN5-7A	BOLT	
45		10	10		10		C10-	--10	--10	-AN5-10A	BOLT	
46		4	4	4	10	4		4		AN5-30A	BOLT	
47		4					C4-		4	AN5-32A	BOLT	
48		18	18	10	12	10	10	10	10	AN960JD516	WASHER	
49		4	4			6				MS21042L5	NUT (OR MS21042-5)	

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/241/143/243, & D407-667-145/245 ASSEMBLIES ABOVE

• COPYRIGHT © 2001 BY DART AEROSPACE LTD •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: C
Date: 05.07.26